

## CLAIMS

1. An immune booster peptide compound comprising:
  - 5       - a polypeptide (i) comprising a 30 amino acid-long amino acid sequence contained in the "knob" domain of the fiber protein of an adenovirus capsid, said amino acid sequence comprising the amino acid chaining forming double  $\beta$ -sheet structure referred to as "EF" contained in said "knob" domain; or
  - 10       - a peptide (ii) analogous to said polypeptide (i), the amino acid sequence of which comprises, as compared to said polypeptide (i) sequence, at least one amino acid substitution or at least one amino acid deletion, said analogous peptide retaining said double  $\beta$ -sheet structure referred to as "EF".
- 15       2. A peptide booster compound according to claim 1, characterized in that, for the polypeptide (i), the amino acid chaining forming the double  $\beta$ -sheet structure referred to as "EF" comprised in the "knob" domain of the fiber protein of an adenovirus capsid is localized approximately in the middle of the amino acid sequence of said polypeptide.
- 20       3. A peptide booster compound according to claim 1 or 2, characterized in that polypeptide (i) is at most 195-amino acid long.
- 25       4. A peptide booster compound according to anyone of claims 1 to 3, characterized in that, for the polypeptide (i), the adenovirus is a human adenovirus.
- 30       5. A peptide booster compound according to claim 4, characterized in that the human adenovirus is selected from sub-group B and C adenoviruses.
6. A peptide booster compound according to claim 4, characterized in that the human adenovirus is selected from the group consisting in adenoviruses having serotypes 12, 18, 31, 3, 7, 11, 14, 16, 21, 34, 35, 1, 2,

5, 6, 8, 9, 10, 13, 15, 17, 19, 20, 22, 23, 24, 25, 26, 27, 28, 29, 30, 32, 33, 36, 37, 38, 39, 42, 43, 44, 45, 46, 47, 48, 49, 4, 40 and 41.

7. A peptide booster compound according to claim 4, characterized  
5 in that polypeptide (i) comprises an amino acid sequence selected from following sequences:

- the sequence beginning with amino acid at position 463 and ending with amino acid at position 515 of SEQ ID N° 1 sequence;
- the sequence beginning with amino acid at position 195 and  
10 ending with amino acid at position 247 of SEQ ID N° 2 sequence;
- the sequence beginning with amino acid at position 472 and ending with amino acid at position 535 of SEQ ID N° 3 sequence.

8. A peptide booster compound according to claim 1, characterized  
15 in that the analogous peptide (ii) comprises from 2 to 10 amino acid substitutions or deletions, as compared to the amino acid sequence of said polypeptide (i).

9. A booster compound according to claim 1 or 8, characterized in  
20 that the polypeptide (i) or analogous peptide (ii) is a cyclic polypeptide.

10. An immune booster composition comprising a booster compound according to anyone of claims 1 to 9, in combination with at least one physiologically compatible excipient.

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11. An immunoconjugate comprising a peptide booster compound according to anyone of claims 1 to 9, covalently bound to an antigen against which an immune response is needed.

12. A booster compound according to one of claims 1 to 9, or an  
30 immunoconjugate according to claim 11, to be used as a booster active agent of an immunogenic composition or of a vaccinal composition.

13. Use of a booster compound according to one of claims 1 to 9, or of an immunoconjugate according to claim 11, for preparing an immunogenic or a vaccinal composition.

5           14. An immunogenic composition comprising a booster compound according to one of claims 1 to 9, in combination with at least one antigen.

15           15. A vaccinal composition comprising a booster compound according to one of claims 1 to 9, in combination with at least one antigen.

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16. A method for maturing *in vitro* human or animal immature dendritic cells, characterized in that it comprises following steps consisting in:

15           a) *in vitro* culturing in a suitable culture medium a cell population enriched with human or animal immature dendritic cell;  
b) incubating the cells cultured in step a) with a booster component according to one of claims 1 to 9 or with a booster composition according to claim 10, for a time sufficient to induce dendritic cell maturation.

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17. A cell population enriched with mature dendritic cells charged with a booster compound according to one of claims 1 to 9 or with a booster composition according to claim 10.

25           18. An immune booster cell composition characterized in that it comprises a mature dendritic cell-enriched cell population according to claim 17.

30           19. A method for preparing an immunogenic cell composition, characterized in that it comprises following steps consisting in:

a) *in vitro* culturing in a suitable culture medium a cell population enriched with human or animal immature dendritic cells;  
b) incubating the cells cultured in step a) with a peptide booster compound according to one of claims 1 to 9 or with a booster

composition according to claim 10, for a time sufficient to induce dendritic cell maturation;

c) adding to cells cultured in step b) at least one antigen against which an immune response is needed.

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20. A method for preparing an immunogenic cell composition, characterized in that it comprises following steps consisting in:

a) *in vitro* culturing in a suitable culture medium a cell population enriched with human or animal immature dendritic cells;

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b) incubating the cells cultured in step a) with an immunoconjugate according to claim 11, for a time sufficient to induce dendritic cell maturation.

21. An immunogenic cell composition, characterized in that it comprises a mature dendritic cell population charged (i) with a booster compound according to one of claims 1 to 9 or with a booster composition according to claim 10, and (ii) charged with the interesting antigen.

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